Serial No.	H-V065-E-1

Type57 TL Butterfly Valves

(Isolator Lug Style/ PVC)

3”-12” (80-300mm)

User’s Manual

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ASAHI *AV* VALVES

This user's guide contains information important to the proper installation, maintenance and safe use of the ASAHI AV product store in an easily accessible location.

<Warning & Caution Signs>

Warning	This symbol reminds the user to take caution due to the potential for serious injury or death.
Caution	This symbol reminds the user to take caution due to the potential for damage to the valve if used in such a manner.

<Prohibited & Mandatory Action Signs>

	Prohibited: When operating the valve, this symbol indicates an action that should not be taken.
	Mandatory action: When operating the valve, this symbol indicates mandatory actions that must be adhered to.

(1) Be sure to read the following warranty clauses of our product

- Always observe the specifications of and the precautions and instructions on using our product.
- We always strive to improve product quality and reliability, but cannot guarantee perfection. Therefore, should you intend to use this product with any equipment or machinery that may pose the risk of serious or even fatal injury, or property damage, ensure an appropriate safety design or take other measures with sufficient consideration given to possible problems. We shall assume no responsibility for any inconvenience stemming from any action on your part without our written consent in the form of specifications or other documented approval.
- The related technicaldocuments, operation manuals, and other documentation prescribe precautions on selecting, constructing, installing, operating, maintaining, and servicing our products. For details, consult with our nearest distributor or agent.
- Our product warranty extends for one and a half years after the product is shipped from our factory or one year after the product is installed, whichever comes first. Any product abnormality that occurs during the warranty period or which is reported to us will be investigated immediately to identify its cause. Should our product be deemed defective, we shall assume the responsibility to repair or replace it free of charge.
- Any repair or replacement needed after the warranty period ends shall be charged to the customer
- The warranty does not cover the following cases:
  (1) Using our product under any condition not covered by our defined scope of warranty.
  (2) Failure to observe our defined precautions or instructions regarding the construction, installation, handling, maintenance, or servicing of our product.
  (3) Any inconvenience caused by any product other than ours.
  (4) Remodeling or otherwise modifying our product by anyone other than us.
  (5) Using any part of our product for anything other than the intended use of the product.
  (6) Any abnormality that occurs due to a natural disaster, accident, or other incident not stemming from something inside our product.

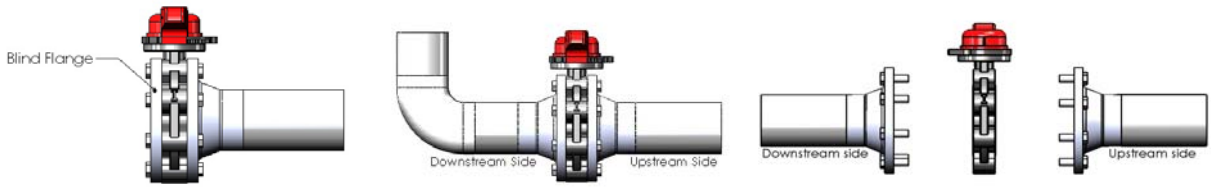
(2) General operating instructions

Warning

- Using a positive-pressure gas with our plastic piping may pose a dangerous condition due to the repellent force particular to compressible fluids even when the gas is under similar pressures used for liquids. Therefore, be sure to take the necessary safety precautions such as covering the piping with protective material. For inquiries, please contact us. For conducting a leak test on newly installed piping, be sure to check for leaks under water pressure. If absolutely necessary to use a gas in testing, please consult your nearest service station beforehand.
- While removal of valves from pipeline or during maintenance, please take precautions to protect worker.
- Before removal of valves from pipeline, make sure to empty the line so no liquid is remaining.
- While removal of a flange on “upstream side” or “downstream side”, draw out fluids from removing side pipeline completely and confirm the other side will be on low pressure to ensure safety.

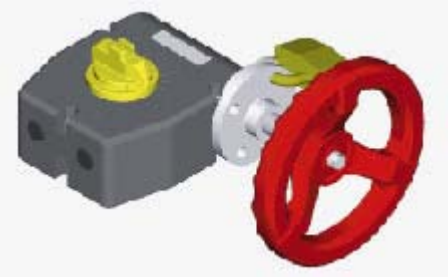
Caution

- Do not step on or apply excessive weight on valve. (It can be damaged.)
- Do not use AV valves in a place where they may become submerged in water. (Submergence will make AV valve fail.)
- Do not use the valve in conditions where the fluid may have crystallized. (The valve will not operate properly.)
- Keep the valve away from excessive heat or fire. (It can be damaged, or destroyed.)
- Always operate the valve within the pressure vs. temperature range. (The valve can be damaged or deformed by operating beyond the allowable range.)
- Allow sufficient space for maintenance and inspection.
- Select a valve material that is compatible with the media. For chemical resistance information, refer to “CHEMICAL RESISTANCE ON ASAHI AV VALVE”. (Some chemicals may damage incompatible valve materials.)
- Keep the valve out of direct sunlight, water and dust. Use cover to shield the valve. (The valve will not operate properly.)
- Perform periodic maintenance. (Leakage may develop due to temperature changes or periods of prolonged storage, rest, or operation.)
- Before opening or closing a lubricant free product, be sure to apply water.
- If you install this valve to the end of the piping, we recommend to use the “Blind Flange” at the opposite side of the valve to prevent accidental opening of the valve.



- Gear Operator Operation; we utilize a self-locking worm gear design on our manual operators. This design allows flow control of the valve in intermediate positions in normal process conditions. In applications where very high velocity, turbulence flow or vibration is present and an intermediate setting is required, It is recommended to install a locking device. The locking device will prevent the possibility of the valve drifting in severe condition from it is original intermediate setting.

Handle lock



(3) General instructions for transportation, unpacking and storage

Warning

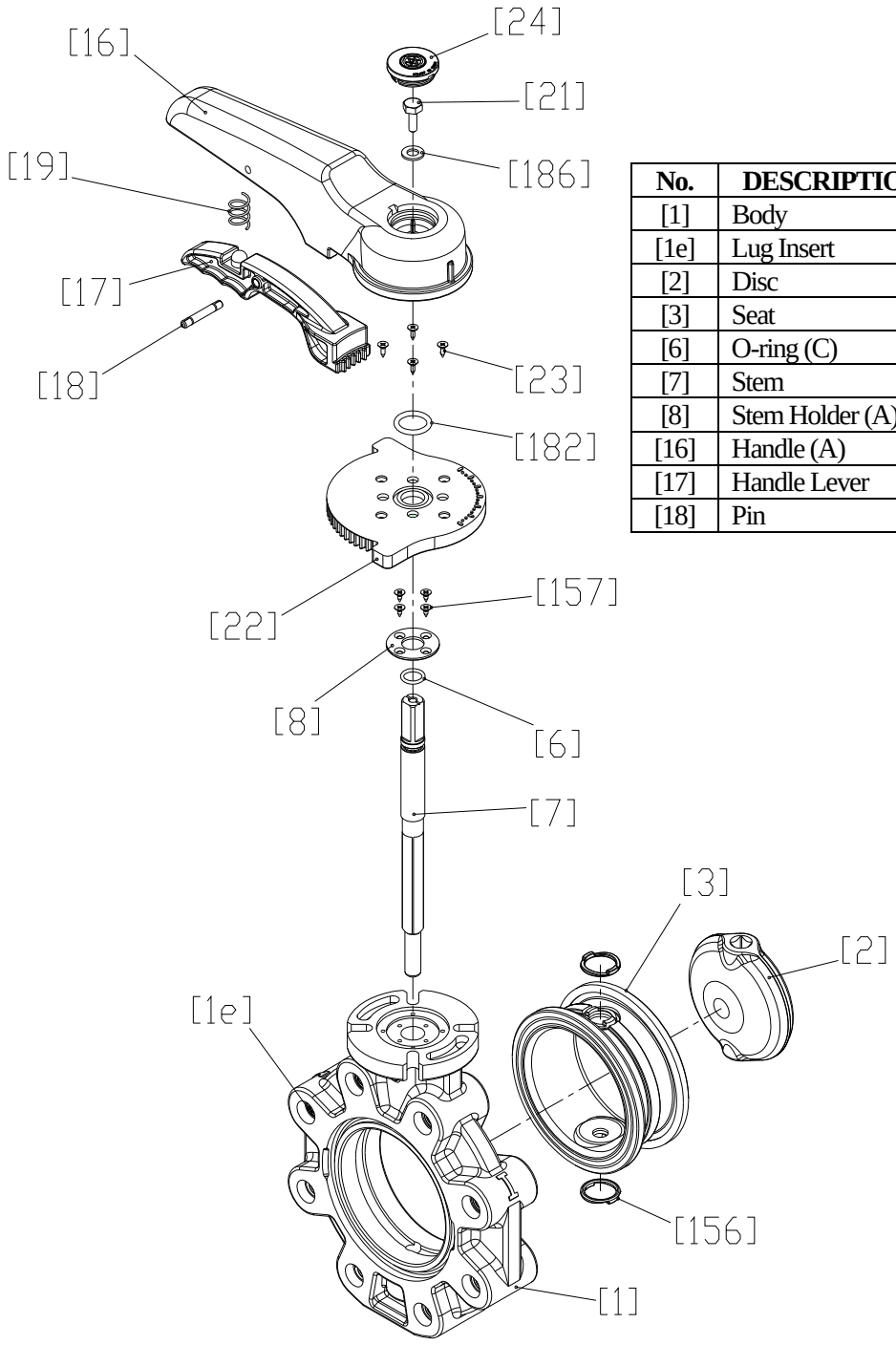
- When suspending and supporting a valve, take care and do not stand under a suspended valve.

Caution

- This valve is not designed to handle impacts of any kind. Avoid throwing or dropping the valve.
- Avoid scratching the valve with any sharp object.
- Do not over-stack cardboard shipping boxes. Excessively stacked packages may collapse.
- Avoid contact with any coal tar creosote, insecticides, vermicides or paint. (These chemicals may cause damage to the valve.)
- When transporting a valve, do not carry it by the handle.
- Store products in their corrugated cardboard boxes. Avoid exposing products to direct sunlight, and store them indoors (at room temperature). Also avoid storing products in areas with excessive temperatures. (Corrugated cardboard packages become weaker as they become wet with water or other liquid. Take care in storage and handling.)
- After unpacking the products, check that they are defect-free and meet the specifications.

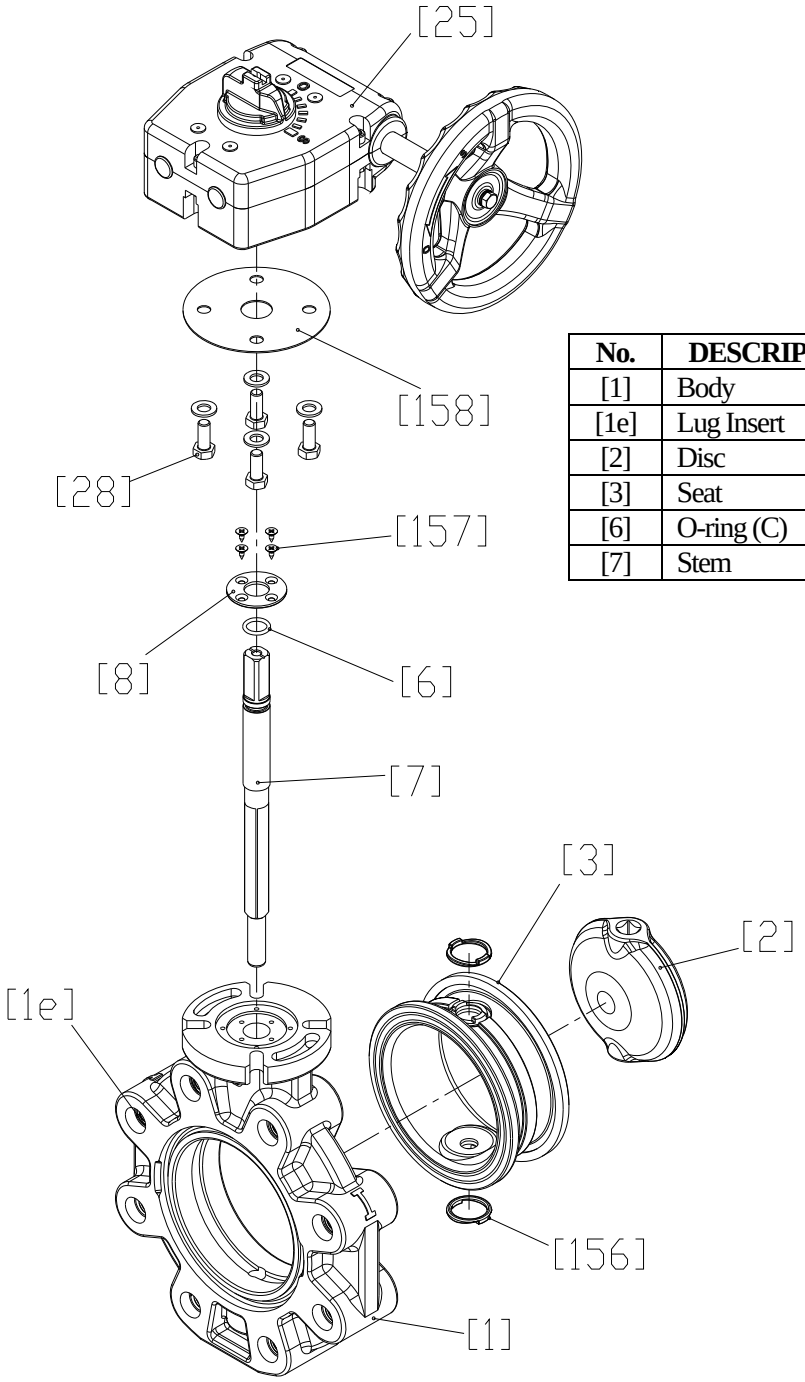
(4) Names of parts

Lever Type 3”-8” (80-200mm)



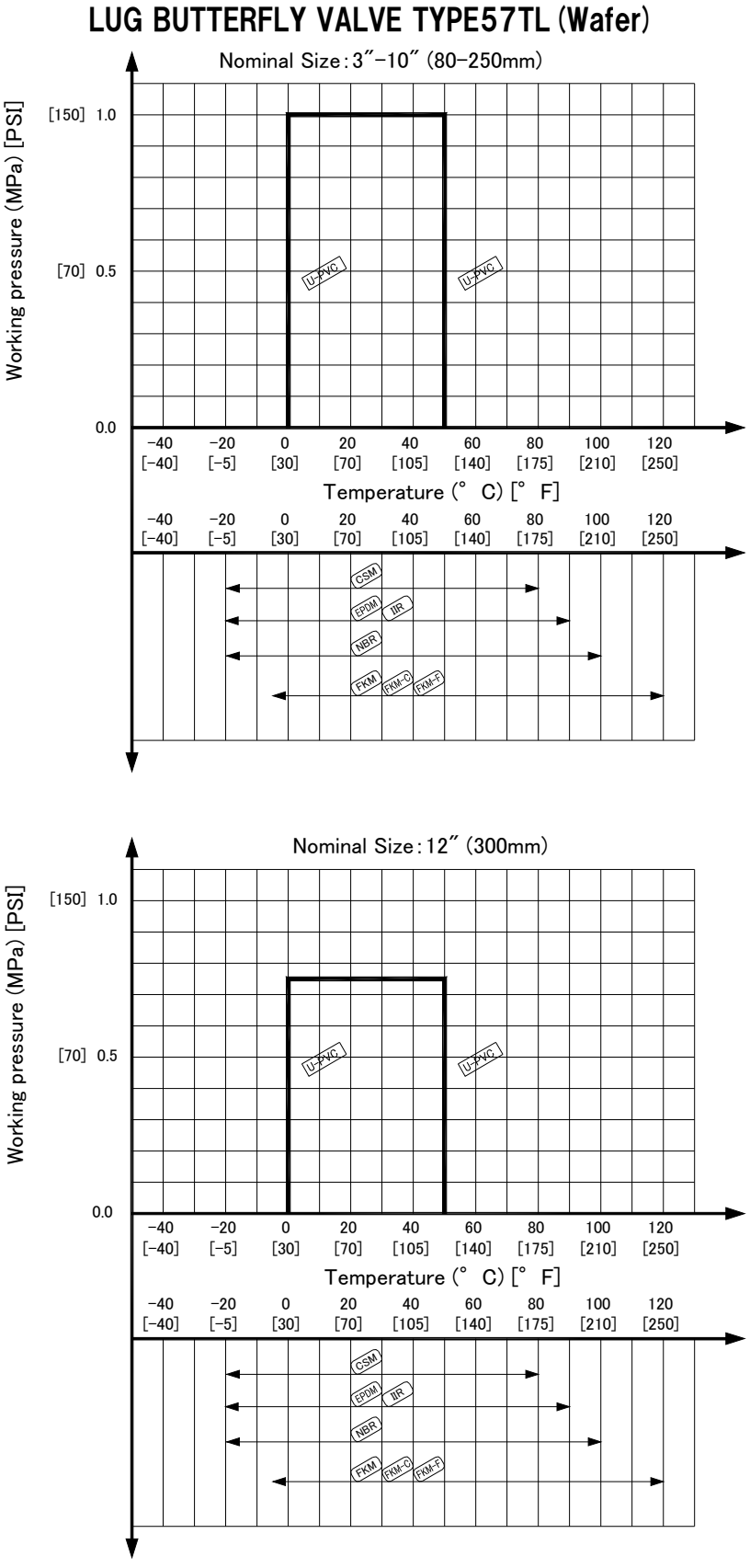
No.	DESCRIPTION	No.	DESCRIPTION
[1]	Body	[19]	Spring
[1e]	Lug Insert	[21]	Bolt (B)
[2]	Disc	[22]	Locking Plate
[3]	Seat	[23]	Screw (B)
[6]	O-ring (C)	[24]	Cap (A)
[7]	Stem	[156]	Retaining Ring
[8]	Stem Holder (A)	[157]	Screw (F)
[16]	Handle (A)	[182]	O-ring (H)
[17]	Handle Lever	[186]	Rubber+Washer
[18]	Pin		

Gear Type 3”-12” (80-300mm)



No.	DESCRIPTION	No.	DESCRIPTION
[1]	Body	[8]	Stem Holder (A)
[1e]	Lug Insert	[25]	Gear Box
[2]	Disc	[28]	Bolt (C)
[3]	Seat	[156]	Retaining Ring
[6]	O-ring (C)	[157]	Screw (F)
[7]	Stem	[158]	Gasket (L)

(5) Working pressure vs. temperature



(6) Installation procedure

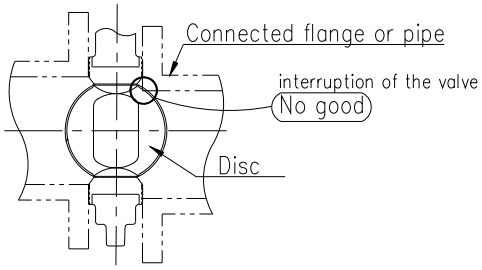
Warning

- When suspending and supporting a valve, take care and do not stand under a suspended valve.

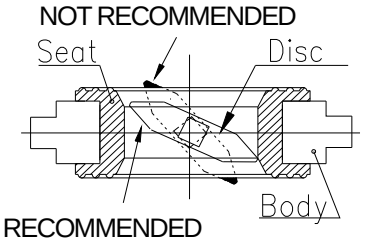
- Be sure to conduct a safety check on all hand and power tools to be used before beginning work.
- Wear protective gloves and safety goggles as fluid remain in the valve even if the pipeline is empty. (You may be injured.)

Caution

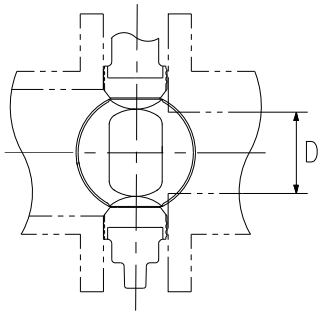
- When installing a pipe support by means of a U-band or something similar, take care not to over-tighten. (Excessive force may damage the pipe.)
- Do not install the valve with the disc fully closed. (The disc may pinch into the seat, resulting in a high operating torque and preventing the valve from operating properly.)
- When installing pipes and valves, ensure that they are not subjected to tension, compression, bending, impact, or other excessive stress.
- Use flat faced flanges for connection to AV Valves.
- Ensure that the mating flanges are of the same standards.
- The gasket is unnecessary. (The seat carries out the role of the gasket.) Additional gaskets will increase stem torque and may make valve fail or become inoperable.
- Care must be used during piping installation to ensure that the pipes or flanges are properly aligned so that the valve disc does not contact them in any setting. Misalignment as in Figure below will result in damage
- The valve disc is sent in the position indicated by solid lines in figure prior to shipment from the factory. If the valve is opened or closed after unpacking, it must be reset in this position before installation. Failure to do so will result in damage to the surface of the valve seat during handling and installation.



INTERFERENCE OF THE DISK



In case of the thick wall of the connection part (flange and pipe) is too thick, shave the flange or the pipe inside in order to avoid the contact of pipe and disc. If inside diameter of the connection part is larger than size D, shaving is not necessity.



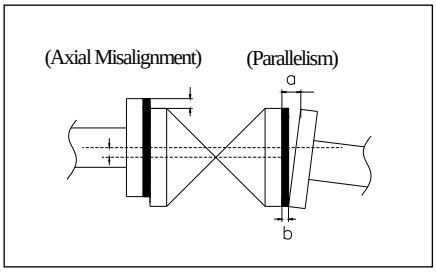
Nominal Size	Diameter D
3” (80mm)	2.64” (67mm)
4” (100mm)	3.58” (91mm)
6” (150mm)	5.39” (137mm)
8” (200mm)	7.05” (179mm)
10” (250mm)	9.09” (231mm)
12” (300mm)	11.02” (280mm)

Caution

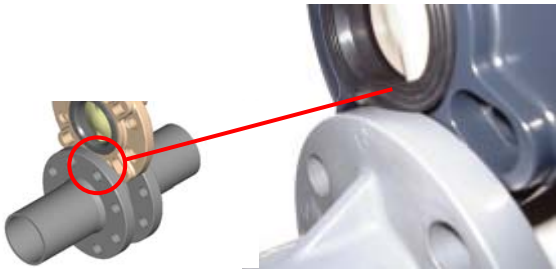
- The parallelism and axial misalignment of the flange surface should be under the values shown in the following table to prevent damage the valve.
(A failure to observe them can cause destruction due to stress application to the pipe)

Unit: inch (mm)

Nom. Size	Axial Misalignment	Parallelism (a – b)
3” (80)	0.04” (1.0)	0.03” (0.8)
4”, 6” (100, 150)	0.04” (1.0)	0.04” (1.0)
8”-12” (200-300)	0.06” (1.5)	0.04” (1.0)



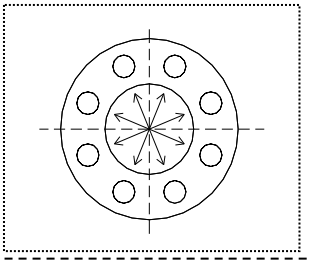
- When you insert a valve between flanges, please insert after extending the fields of flanges fully.
(If you insert a valve by force without fully extending fields of flanges, a liner may be turned over and suffer a crack.)



- Tighten the bolts and nuts gradually with torque wrench to the specified torque in a diagonal manner.
- Avoid excessive tightening. (The valve can be damaged.)

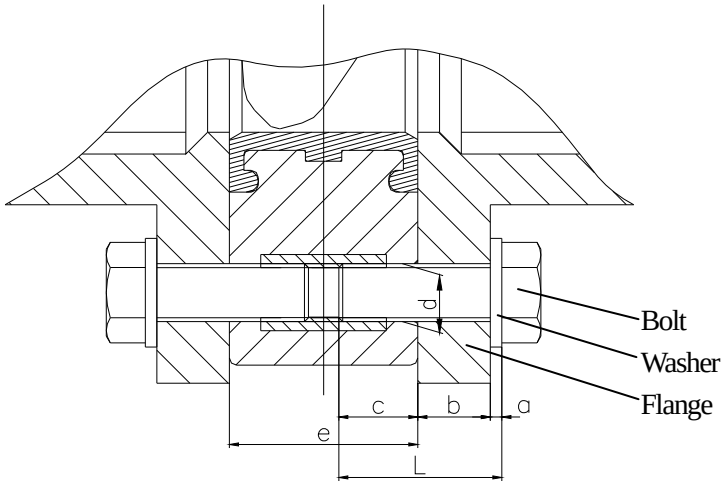
Recommended torque value Unit: N·m {kgf·cm} [lb·inch]

Nom. Size	3”, 4” (80, 100mm)	6” (150mm)	8”, 10” (200, 250mm)	12” (300mm)
Torque value	30.0 {306} [266]	40.0 {408} [355]	55.0 {561} [488]	60.0 {612} [532]



Necessary items

● Torque Wrench ● Spanner Wrench ● Bolt, Washer



1) Bolt length (Flanges: AV TS Flange ANSI) Unit: inch

Nominal Size	Thickness of Washer	Thickness of Flange	Body Insertion Part	Face-to-Face Dimension	Lug Insert	Recommended Bolt Length	
	a	b	c	e	Internal Thread	d	L
3” (80mm)	0.13”	0.94”	0.67”	1.73”	5/8-11 UNC	5/8-11 UNC	1.80”
4” (100mm)	0.13”	0.94”	0.87”	2.05”	5/8-11 UNC	5/8-11 UNC	2.00”
6” (150mm)	0.13”	1.02”	0.91”	2.64”	3/4-10 UNC	3/4-10 UNC	2.10”
8” (200mm)	0.13”	1.10”	1.18”	3.25”	3/4-10 UNC	3/4-10 UNC	2.50”
10” (250mm)	0.13”	1.18”	1.26”	4.17”	7/8-9 UNC	7/8-9 UNC	2.80”
12” (300mm)	0.13”	1.18”	1.57”	4.82”	7/8-9 UNC	7/8-9 UNC	3.10”

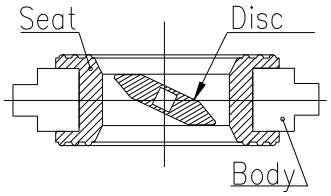
※The body insertion part (c) above shows the minimum value.

2) Bolt length (Flanges: Except for AV TS Flange ANSI)

- Bolt length [L] = Thickness of Washer [a] + Body Insertion Part [c] + Thickness of Flange [ ] inch

※Make sure to check whether both upstream and downstream side bolt does not interfere with each other.

Procedure

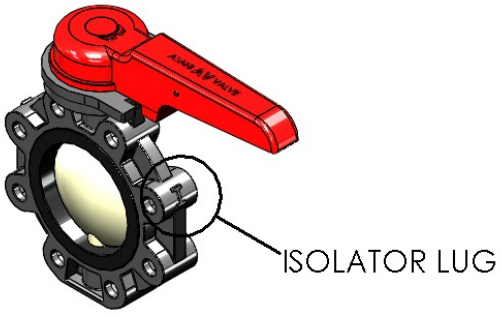


1) Install the valve between flanges and open the valve slightly.

- Tubing with the piping of upstream -

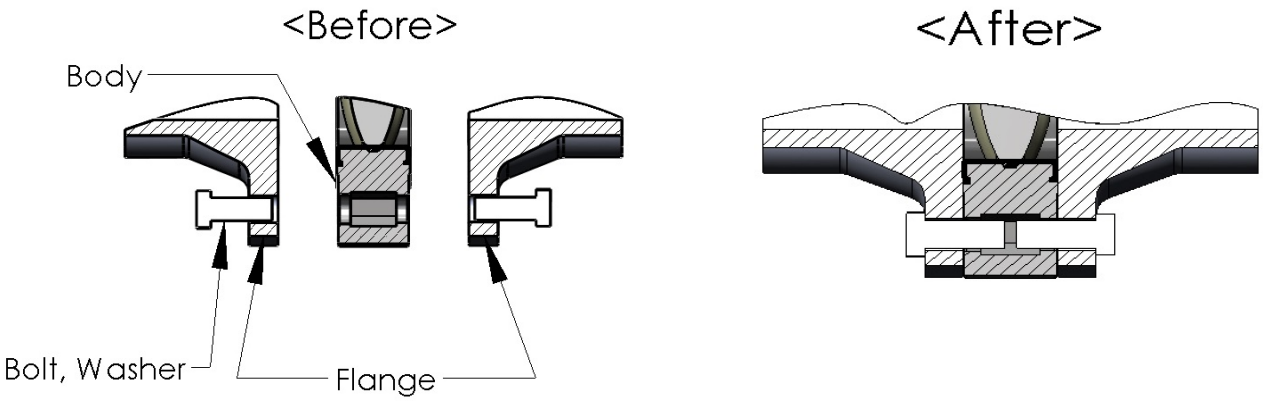
2) Lug-Insert [1e] is factory molded in the body [1].
3) There is no flow directional requirement for the 57TL [1].
4) Insert bolts, set nuts and washer and tighten the bolts and nuts temporarily by hand.
5) Tighten the bolts and nuts gradually with torque wrench to the specified torque in a diagonal manner.

Caution - Be certain the valve type is the Type 57TL Isolator Lug Butterfly Valve. This is denoted by a factory molded 'I' on valve body.



- Tubing with the piping of downstream -

6) The flange on the downstream side is set.
7) Insert bolts, set nuts and washer and tighten the bolts and nuts temporarily by hand.
8) Tighten the bolts and nuts gradually with torque wrench to the specified torque in a diagonal manner.



(7) Operating procedure

Caution

- Do not use the valve to fluid containing slurry. (The valve will not operate properly.)
- The installed valve must never be opened or closed when foreign matter such as sand is present in the pipeline.
- Do not exert excessive force in closing the valve.
- When operating the handle, be sure to do so with your hand. (Using a tool may damage the handle.)

1) Open and close the valve by turning handle smoothly.
(Turn clockwise to close and counterclockwise to open.)

2) In case of lever type (3”-8” {80-200mm}), the direction of handle is same as the disc as shown in Fig. 7-1.
   - For the full-shut (Close) position, the handle is perpendicular to the piping axis direction.
   - For the full-opened position, the handle is parallel to the piping axis direction.

Full -Shut (Close) Position Full-Opened Position

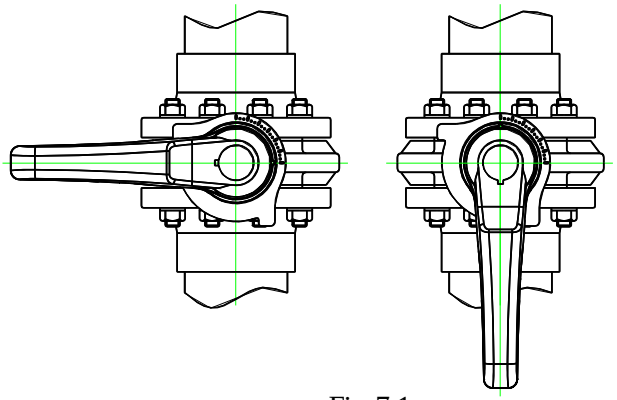
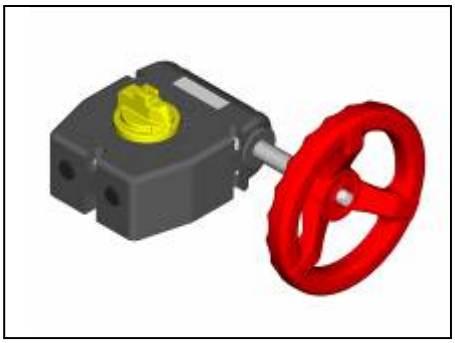
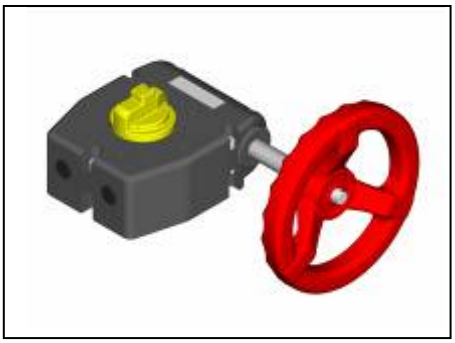


Fig. 7-1

3) In case of gear type (3”-12” {80-300mm}), the indicator shows the position of the disc on the top of gear box.
   - For the full-shut (close) position, the indication shows Shut (S).
   - For the full-opened position, the indication shows Open (O).

Full-Shut (Close) Position Full- Opened Position





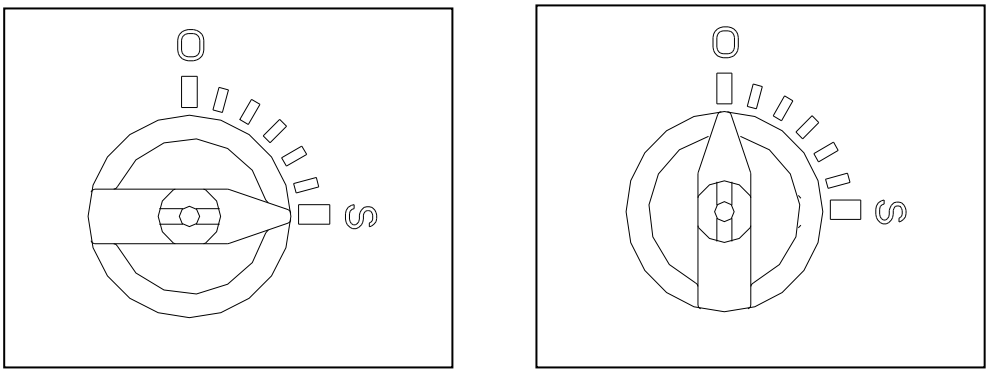


Fig. 7-2

Technical data for operation

Nom. Size	Stem Torque (N·m)		Required Operating Force (N)	
	Peak	Seal	Lever	Gear
3” (80mm)	20	20	80	10
4” (100mm)	29	27	108	14
6” (150mm)	82	62	194	32
8” (200mm)	190	162	386	84
10” (250mm)	300	250	-	130
12” (300mm)	370	330	-	73

Note : Data mentioned in the table above is reference only.

These data are measured in standard condition and it slightly differs depending on conditions.

(8) Disassembly and assembly procedure for parts replacement

Warning - The handle part can be removed with line pressure present. The stem retainer can't be removed with line pressure present. If stem retainer needs to be removed, there can not be line pressure present.

- Do not change or replace valve parts under line pressure.

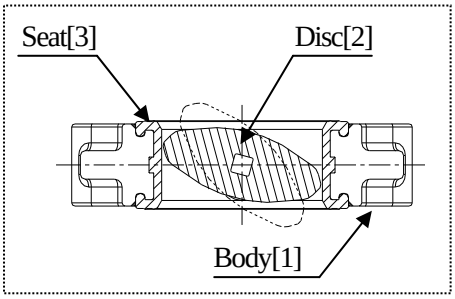
- Wear protective gloves and safety goggles as fluid remain in the valve even if the pipeline is empty. (You may be injured.)

Caution - When installing pipes and valves, ensure that they are not subjected to tension, compression, bending, impact, or other excessive stress.

Necessary items

- Protective Gloves
- Vise
- Circular Stick (Plastic or Wood)
- Goggles
- Grease
- Pressing Machine
- Screw Driver (+)
- Spanner Wrench
- Square Lumber
- Hammer
- Screw Driver (-)

<< Disassembly >>

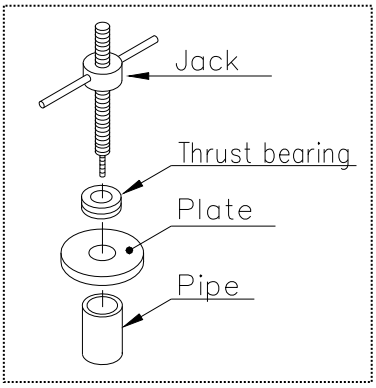


Procedure

1) Drain fluid completely from the pipeline.
2) Leave the valve slightly opened.
3) Loosen the connecting bolts and nuts.
4) Remove the valve from the pipeline.

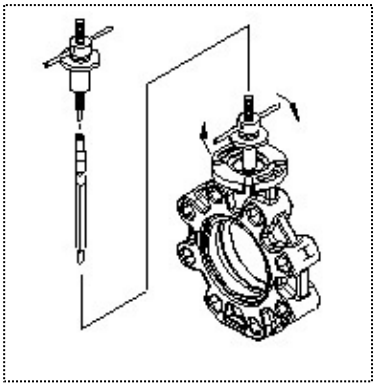
Lever Type

5) To remove handle (A) [16], first take off the cap (A) [24] by using screw driver (–) and release bolt (B) [21] by using socket wrench, then pull up the handle (A) [16] while holding handle lever [17].
6) To take off locking plate [22], release 4 self-tapping screws (B) [23] by using screw driver (+) and take off stem holder (A) [8].



Gear Type

7) Loosen set bolt (C) [28] for gear box [25] and pull off the gear box upward with gasket (L) [158].
8) To take off stem holder (A) [8]. Release 4 tapping screws (F) [157] by using screw driver (+).



Lever & Gear Type

9) Hold flat surface of Stem [7] with vise and pull off valve body [1].
10) **(A)** Set the valve body [1] on square lumbers at edges of valve body on the press and put a lumber on the disc [2].
Operate the press slowly and push disc [2] and seat [3] out if the valve body [1].
(B) Set the valve body [1] on square lumbers at edges of valve body and put a circular stick on the disc [2].
Strike the circular stick with a hammer and remove disc [2] and seat [3] out of the valve body [1].
11) Set the disc [2] parallel to the working desk to half opened position. Push the seat [3], and remove the disc [2].
12) Remove the retaining ring [156] and the O-ring (C) [6] from the stem [7].

<< Assembly >>

Procedure

1) Put the O-ring (C) [6] onto the stem [7].
2) Before starting assembly, grease (Silicone) should be spread on the top and bottom disc [2], the stem hole of the seat [3] and the stem O-ring (C) [6].

3) Insert the retaining ring [156] into the upper side slot of the seat [3]. The upper side slot of seat [3] has larger stem hole than lower side.

Caution

- Make certain tabs are properly aligned. Both upper and lower retaining rings [156] are identical.

4) Insert the stem [7] about 1/3 into the body [1]. Install the seat [3] into the body [1] by aligning upper seat stem hole with the stem [7].
5) Collapse the left or right side of seat [3] in towards opposing side exposing lower stem hole by screw driver (–). Install the retaining ring [156] into the body [1] aligning tabs of ring with center groove of the body [1]. Seat [3] tabs should line up when bottom of seat is reset into body of valve.
6) Remove the stem [7].
7) Reset the seat [3] into the body [1].

Caution

- Make certain retaining rings [156] sit flush inside of seat [3] with tabs properly aligned. If retaining rings [156] are not installed correctly, the seat [3] will not sit in the body [1] properly. This is indicated by a visible gap between seat [1] and body [1], and disc [2] will not fit properly.

8) To install disc [2], make certain valve size on disc [2] is in upright direction. Install top of disc [2] into seat [3] aligning with upper stem hole.
9) Rotate disc [2] to 75% (Approx.) closed position and install stem [7] about 50% into the body [1].
10) Press in bottom of disc [2] to lower stem hole.

Caution

- Look into valve body [1] to be certain full square in disc [2] is centered with upper valve [1] stem hole. If not, repeat step 8), 9), and 10).
Make certain line scribed on top of stem [7] indicates disc [2] position while installing stem [7].

11) Install the stem [7] into valve body [1] and disc [2]. If disc [2] is properly aligned, stem [7] should slide in smoothly. If stem [7] does not slide in smoothly, repeat from step 8) to properly align the disc [2] in the valve body [1].
12) Install stem holder (A) [8] onto valve body [1] with countersunk holes facing up using 4 screws (F) [157].
13) To install lever or gear operator reverse disassembly procedure #5).
14) After assembly, make sure that the valve can be fully opened and closed smoothly.

(9) Installation procedure for handle

Necessary items

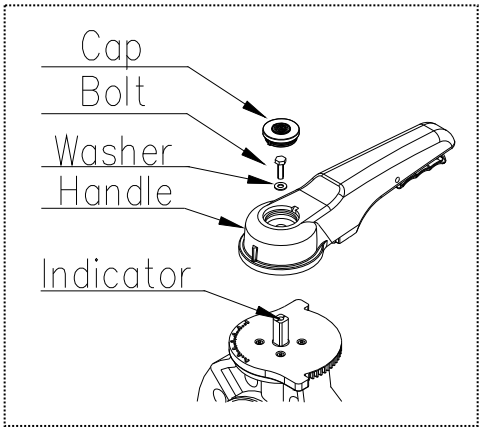
- Plastic Hammer
- Socket Wrench
- Screw Driver (–)
- Goggles
- Protective Gloves

Caution - Do not give any unjust force to cap, in installing or removing the cap. (It can be damaged)

<<Installation>>

Procedure

1) Install the handle on the stem. Set the direction of handle in the indication line at the top of stem.
2) Fix the handle at the top of stem with the attached bolts and washer by using socket wrench.
3) Set the convex part at the side of the cap and the concave of the handle, and set in the cap by striking lightly by using a plastic hammer.

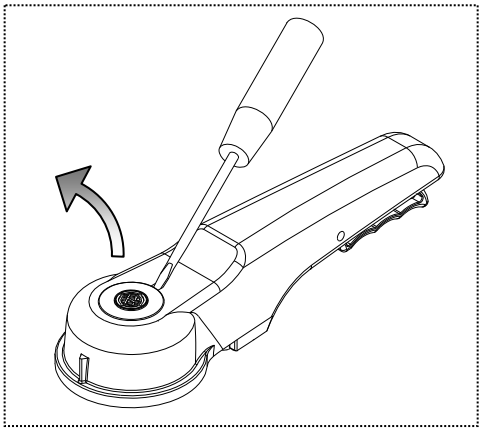


Nominal Size	3", 4" (80, 100mm)	6"-8" (150-200mm)
Bolt Size	M6 × 15L	M8 × 15L
Socket Size	10	13

《Remove》

Procedure

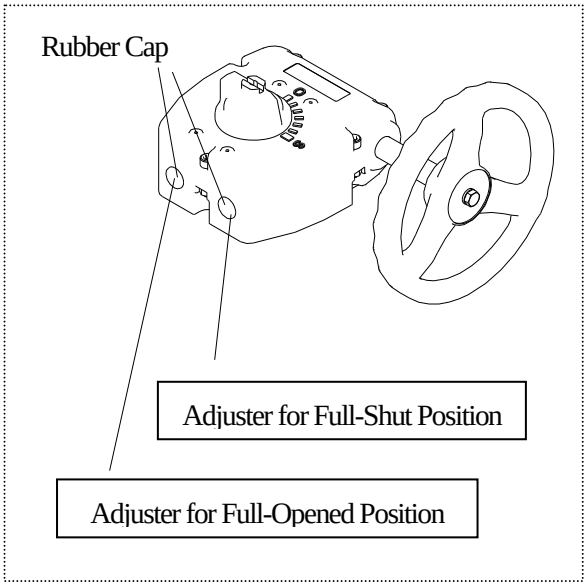
1) To remove the cap, push up the side of the cap by using screw driver (–).
2) Loose the bolts and washer by using socket wrench, then remove the handle.



(10) Adjustment procedure for stopper gear type

Necessary Items
- Allen Wrench

The adjustments for full-opened and full-shut position are step-less, and it can be done with the stopper adjuster.



Adjustment for Full-shut (Full-opened) position

1) Remove the rubber cap of Full-closing (Full-opening) adjuster.
2) Loosen the first stopper hex-bolt completely by Allen Wrench.
3) Adjust the disc of valve to required position.
4) Tighten the stopper hex-bolts.
5) Put the rubber cap of Full-closing (Full-opening) adjuster back on gearbox.

(11) Inspection items

Caution - Perform periodic maintenance. (Leakage may develop due to temperature changes or over periods of prolonged storage, rest or operation.)

Inspect the following items.

(1)	Check for the existence of flaw, crack, or deformation on the valve.
(2)	Check for the existence of leakage from the valve to the outside of the pipeline.
(3)	Check for the deformation of seat due to improper installation of valve.
(4)	Check for the smoothness of handle operation.

(12) Troubleshooting

Phenomenon	Cause	Treatment
Fluid is not stopped in the full closed position at the seat.	1) The stopper is not set correctly. 2) The seat is damaged or worn. 3) Foreign materials are caught. 4) The disc is damaged or worn. 5) The connecting bolts are over tightened or tightened unevenly.	Adjust the stopper. Replace the seat. Clean it up. Replace the disc. Adjust and retighten.
Fluid leaks to the outside.	1) The seat is damaged or worn. 2) The connecting bolts are not tightened in proper torque or evenly.	Replace the seat. Adjust and retighten.
The handle does not work smoothly.	1) Foreign materials have adhered. 2) The gear box is damaged. 3) The connecting bolt is over tightened.	Clean it up. Repair or replace. Adjust and retighten.
Valve does not operate	1) The gear box is damaged 2) The stem is damaged.	Repair or replace. Replace the stem.

(13) Handling of residual and waste materials

Warning

- Make sure to consult a waste treatment dealer for recommendations on the proper disposal of plastic valves. (Poisonous gas is generated when the valve is burned improperly.)

Butterfly Valves Type 57TL

ASAHI *AV* VALVES

Distributor

Asahi Organic Chemicals Industry's homepage http://www.asahi-yukizai.co.jp/en/

Information in this manual is subject to change without notice. 2012.2